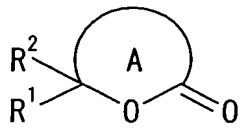
Claims:

1. A method for producing a lactone comprising culturing *Candida sorbophila* in a medium containing at least one selected from the group consisting of a hydroxy fatty acid, a hydroxy fatty acid derivative, and a hydrolysate of a hydroxy fatty acid derivative, and recovering the produced lactone from the medium.

2. A method for producing a lactone comprising culturing *Candida sorbophila* in a medium containing at least one selected from the group consisting of a hydroxy fatty acid, a hydroxy fatty acid derivative, and a hydrolysate of a hydroxy fatty acid derivative, and lactonizing a lactone precursor hydroxy fatty acid produced in the medium.

3. The method according to claim 1 or 2, wherein the *Candida sorbophila* is at least one selected from the group consisting of the *Candida sorbophila* strain ATCC 74362, the *Candida sorbophila* strain ATCC 60130, the *Candida sorbophila* strain IFO 1583, and the *Candida sorbophila* strain FC 58 deposited under the accession number FERM BP-8388.

4. The method according to claim 1 or 2, wherein the lactone is represented by general formula (1):



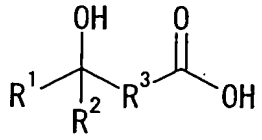

(1)

wherein ring A represents a lactone ring; $R^1$ represents a hydrogen atom, a hydrocarbon group, a substituted hydrocarbon group, a heterocyclic group, or a substituted heterocyclic group; and $R^2$ represents a hydrogen atom, a hydrocarbon group, or a substituted hydrocarbon group; in which ring A and $R^2$ may be bonded to form a ring.

5. The method according to claim 1 or 2, wherein the lactone is an optically active lactone.

6. The method according to claim 1 or 2, wherein the hydroxy fatty acid is

represented by general formula (2):

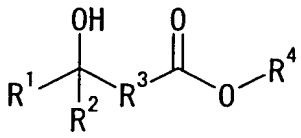


(2)

wherein $R^1$ represents a hydrogen atom, a hydrocarbon group, a substituted hydrocarbon group, a heterocyclic group, or a substituted heterocyclic group; $R^2$ represents a hydrogen atom, a hydrocarbon group, or a substituted hydrocarbon group; and $R^3$ represents an optionally substituted divalent hydrocarbon group having a 4 or more-carbon chain; in which $R^2$ and $R^3$ may be bonded to form a ring.

7. The method according to claim 1 or 2, wherein the hydroxy fatty acid derivative is an alkyl ester of hydroxy fatty acid or a glyceride of hydroxy fatty acid.

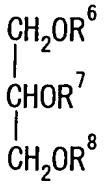
8. The method according to claim 7, wherein the alkyl ester of hydroxy fatty acid is represented by general formula (3):



(3)

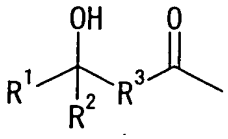
wherein $R^1$ represents a hydrogen atom, a hydrocarbon group, a substituted hydrocarbon group, a heterocyclic group, or a substituted heterocyclic group; $R^2$ represents a hydrogen atom, a hydrocarbon group, or a substituted hydrocarbon group; $R^3$ represents an optionally substituted divalent hydrocarbon group having a 4 or more-carbon chain; and $R^4$ represents an alkyl group; in which $R^2$ and $R^3$ may be bonded to form a ring.

9. The method according to claim 7, wherein the glyceride of hydroxy fatty acid is represented by general formula (4):



(4)

wherein $R^6$ to $R^8$ each independently represents a hydrogen atom or a group represented by general formula (6):



(6)

wherein $R^1$ represents a hydrogen atom, a hydrocarbon group, a substituted hydrocarbon group, a heterocyclic group, or a substituted heterocyclic group; $R^2$ represents a hydrogen atom, a hydrocarbon group, or a substituted hydrocarbon group; $R^3$ represents an optionally substituted divalent hydrocarbon group having a 4 or more-carbon chain; and $R^4$ represents an alkyl group; in which $R^2$ and $R^3$ may be bonded to form a ring, provided that at least one of $R^6$ to $R^8$ is a group represented by the above general formula (6).

10. The method according to claim 1 or 2, wherein *Candida sorbophila* is cultured in a medium containing at least one selected from the group consisting of castor oil, a castor oil hydrolysate, ricinoleic acid, 11-hydroxypalmitic acid, lesquerolic acid, 10-hydroxystearic acid, 10-hydroxypalmitic acid, and ethyl 11-hydroxypalmitate.

11. The method according to claim 2, wherein the lactone precursor hydroxy fatty acid is a hydroxy fatty acid of 4 or more carbon atoms having a hydroxy group at position 4 or 5 thereof.

12. The method according to claim 1 or 2, wherein the lactone is any one selected from the group consisting of γ-decalactone, γ-valerolactone, γ-hexalactone, γ-heptalactone, γ-octalactone, γ-nonalactone, γ-undecalactone, γ-dodecalactone, γ-tridecalactone, γ-tetradecalactone, δ-decalactone, δ-hexalactone, δ-heptalactone,

δ-octalactone, δ-nonalactone, δ-undecalactone, δ-dodecalactone, δ-tridecalactone, and δ-tetradecalactone.

13. A method for producing a lactone precursor hydroxy fatty acid comprising culturing *Candida sorbophila* in a medium containing at least one selected from the group consisting of a hydroxy fatty acid, a hydroxy fatty acid derivative, and a hydrolysate of a hydroxy fatty acid derivative.

14. A method for producing γ-decalactone comprising culturing *Candida sorbophila* in a medium containing at least one selected from the group consisting of castor oil, a castor oil hydrolysate, ricinoleic acid, and lesquerolic acid, and recovering the produced γ-decalactone from the medium.

15. A method for producing γ-decalactone comprising culturing *Candida sorbophila* in a medium containing at least one selected from the group consisting of castor oil, a castor oil hydrolysate, ricinoleic acid, and lesquerolic acid, and lactonizing γ-hydroxydecanoic acid produced in the medium.

16. The method according to claim 14 or 15, wherein γ-decalactone is an optically active γ-decalactone.

17. The method according to claim 14 or 15, wherein at least one selected from the group consisting of castor oil, a castor oil hydrolysate, ricinoleic acid, and lesquerolic acid is castor oil and/or a castor oil hydrolysate.

18. A method for producing δ-decalactone comprising culturing *Candida sorbophila* in a medium containing 11-hydroxypalmitic acid and/or ethyl 11-hydroxypalmitate and recovering the produced δ-decalactone from the medium.

19. A method for producing δ-decalactone comprising culturing *Candida sorbophila* in a medium containing 11-hydroxypalmitic acid and/or ethyl 11-hydroxypalmitate and lactonizing δ-hydroxydecanoic acid produced in the medium.

20. The method according to claim 18 or 19, wherein δ-decalactone is an optically active δ-decalactone.

21. The method according to claim 14, 15, 18, or 19, wherein the *Candida sorbophila* is at least one selected from the group consisting of the *Candida sorbophila*

strain ATCC 74362, the *Candida sorbophila* strain ATCC 60130, the *Candida sorbophila* strain IFO 1583, and the *Candida sorbophila* strain FC 58 deposited under the accession number FERM BP-8388.

22. Use of *Candida sorbophila* for producing a lactone.

23. A *Candida sorbophila* strain FERM BP-8388.